

crystallizing said ferroelectric film by applying a thermal annealing process in an atmosphere containing a non-oxidizing gas and an oxidizing gas; and

forming an upper electrode layer on said ferroelectric film, wherein said step of crystallizing said ferroelectric film is conducted by setting a composition of said atmosphere such that said atmosphere contains said oxidizing gas with a fraction of 1 to 50% in volume.

7. (Amended) A method as claimed in claim 1, wherein said step of forming said ferroelectric film comprises the step of forming said ferroelectric film by a sputtering process.

Please add new claims 21-28 as follows:

21. A method of fabricating a semiconductor device having a ferroelectric capacitor, comprising the steps of:

forming an active device element on a substrate;

forming an insulation film over said substrate to cover said active device element;

forming a lower electrode layer of said ferroelectric capacitor over said insulation film;

forming a ferroelectric film on said lower electrode layer as a capacitor insulation film of said ferroelectric capacitor;

crystallizing said ferroelectric film by applying a thermal annealing process in an atmosphere containing a non-oxidizing gas and an oxidizing gas; and

forming an upper electrode layer on said ferroelectric film, wherein said method further comprises the step, after said step of crystallizing said ferroelectric film, of oxidizing said ferroelectric film in an oxidizing atmosphere.

22. A method as claimed in claim 21, wherein said step of forming said lower electrode layer includes depositing a Ti layer and a Pt layer consecutively.